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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,482	04/01/2004	Frederick A. Perner	200311703-1	1213

22879 7590 08/19/2005

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EXAMINER

MAI, SON LUU

ART UNIT PAPER NUMBER

2827

DATE MAILED: 08/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

N/A

Office Action Summary

Application No.

10/816,482

Applicant(s)

PEMER, FREDERICK A.

Examiner

Son L. Mai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-28 is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5, 9, 10 and 29 is/are rejected.
- 7) ☒ Claim(s) 2, 4, 6-8 and 11-16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 04-01-04.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

1. Papers filed 04-01-04 have been entered. Accordingly, claims 1-29 are pending in the application.

Information Disclosure Statement

2. The information disclosure statement filed 04-01-04 has been considered.

Specification

3. The disclosure is objected to because of the following informalities:

On page 8, line 20, the reference numerals "710, 710" should read --710, 720--.

In claim 24, line 5, "a second MRAM cell" should read --the second MRAM cell-- for referring to a second MRAM cell in line 3. Next, the words "and" in lines 7 and 9 should read --at--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 3, 5, 9 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishikawa (U.S. Patent 6,903,965).

Regarding claim 1, Ishikawa teaches a resistance change sensor (as shown in figure 16), comprising: a first input (DSL) connected to a first resistance (TMR); a second input (DSLr) connected to a second resistance (TMRr); a resistance detector (50) for sensing a resistive change in at least one of the first resistance and the second resistance.

Regarding claim 3, Ishikawa teaches the first resistance (TMR) is one of a high resistance and a low resistance, and the second resistance (TMRr) is the other of the high resistance and the low resistance (see column 3; reference cell having a resistance of an intermediate level is considered either high or low resistance comparing to MC cell of low or high resistance).

Regarding claim 5, Figure 16 of Ishikawa shows the second resistance (TMRr) is a reference resistor.

Regarding claim 9, Figure 16 of Ishikawa shows a magnetic sensing device comprising a first sensor input (DSLr) connected to a first tunneling magneto-resistive (TMJ) cell (TMR), the first TMJ cell including a first resistance; a second sensor input (DSLr) connected to a second TMJ cell (TMRr), the second TMJ cell including a second resistance; and a detector (50) for sensing a change in resistance of the first TMJ cell and the second TMJ cell.

Regarding claim 10, Ishikawa teaches the first TMJ cell is a first MRAM cell, and the second TMJ cell is a second MRAM cell (see column 3).

6. Claim 29 is rejected under 35 U.S.C. 102(b) as being anticipated by Alexander (U.S. Patent 4,818,977). Alexander teaches a resistance change sensor, comprising: a

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first input connected to a first resistance (102); a second input connected to a second resistance (105); a resistance detector (106) for sensing a resistive change in at least one of the first resistance and the second resistance; wherein at least one of the first resistance and the second resistance comprise at least one of a chemical-resistance sensitive device, a pressure-resistance sensitive device, a temperature-resistance device, and photo-resistive device (see column 4).

Allowable Subject Matter

7. Claims 17-28 are allowed.
8. Claims 2, 4, 6-8, 11-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
9. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to teach the further limitations of at least claim 2 which calls for the first resistance and the second resistance are load resistors of a cross-coupled pair of transistors forming a differential pair amplifier of the resistance change sensor.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tang (U.S. Patent Application Publication 20050083747), Ishikawa (U.S. Patent 6781873), Hosotani (U.S. Patent 6778426) disclose resistance change sensors for MRAM devices.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Son L. Mai whose telephone number is 571-272-1786.

The examiner can normally be reached on 8am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

08-16-05



Son L. Mai
Primary Examiner
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